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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/770,358  | 02/02/2004  | Ronald S. Karr       | VRT0133US           | 7650             |
| 60429   | 7590        | 12/22/2006           | EXAMINER            |                  |
| CSA LLP<br>4807 SPICEWOOD SPRINGS RD.<br>BLDG. 4, SUITE 201<br>AUSTIN, TX 78759 |             |                      | YU, JAE UN          |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2185                |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  | MAIL DATE   | DELIVERY MODE        |                     |                  |
| 3 MONTHS  | 12/22/2006  | PAPER                |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/770,358             | KARR ET AL.         |  |
|                              | Examiner<br>Jae U. Yu  | Art Unit<br>2185    |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 October 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-22 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

The examiner acknowledges the applicant's submission of the amendment dated 10/23/2006. At this point claims 1, 6, 8, 12, 17 and 19 have been amended. Thus, claims 1-22 are pending in the instant application.

### *Response to the Amendment*

In view of the applicant's amendment, the 35 USC 112 rejection dated 7/20/2006 is withdrawn.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 4-10, 12, 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Shackelford et al. (US 2005/0154845).
  
2. Independent claims 1 and 12 disclose, "a memory medium comprising instructions executable by a computer system [“Code in the computer readable medium is executed by a processor”, Paragraph 91]."

“Creating a first storage object, wherein the first storage object comprises creating a first storage object description, wherein the first storage object description comprises data that relates [Mapping between virtual and physical volumes, Paragraph 34] the first storage object to first underlying storage objects or to first physical memory regions [Virtual volumes (“the first storage object”) that correspond to the “physical storage” 106 (Figure 1), Paragraph 38]”

“Creating a second storage object as a virtual snapshot copy of the first storage object [“Virtualized” mirror of the primary storage, Figure 1], wherein creating the second storage object comprises creating a second storage object description, wherein the second storage object description comprises data identifying the second storage object as a snapshot copy [Maintaining the consistency between the copy and the original storage (The replication management application identifies the secondary storage control as a copy of the primary storage control), Paragraph 34] of the first storage object”

“Adding to the first storage object description data identifying the second storage object as a snapshot copy of the first storage object [The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]”

"Transmitting the first storage object description to a first computer system, and ;  
transmitting the second storage object description to a second computer system

**[Storing "virtual volumes" 206 in "physical storages" 106/108, Figure 1 & 2]**

3. **Claims 4 and 15** disclose, "information relating **[Mapping between virtual and physical volumes, Paragraph 34]** the second storage object to second underlying storage objects or second memory regions **[Virtual volumes ("the second storage object") that correspond to the "physical storage" 108, Figure 1]**".

4. **Claims 5 and 16** disclose, "modifying the first storage description **[("Data Update Stream" 200, Figure 2)]**".

"Transmitting the modified first storage description to the first and second computer systems **[Storing the updates to "Primary Storage Control" 100 and "Secondary Storage Control" 102, Figure 2]**"

5. **Independent claims 6 and 17** disclose, "a memory medium comprising instructions executable by a computer system **[("Code in the computer readable medium is executed by a processor", Paragraph 91)]**".

"Creating a second storage object, wherein creating the second storage object is created as a virtual snapshot copy of a first storage object **[("Virtualized" mirror of the**

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**primary storage, Figure 1], wherein creating the second storage object comprises creating a description of the second storage object [Maintaining the consistency between the copy and the original storage (The replication management application identifies the secondary storage control as a copy of the primary storage control), Paragraph 34]**"

"Adding data to a description for the first storage object to indicate that the first storage object is related to the second storage object [The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]"

6.     Claims 7 and 18 disclose, "transmitting the first storage object to a first computer system, and; transmitting the second storage object description to a second computer system [**Storing "virtual volumes" 206 in "physical storages" 106/108, Figure 1 & 2]**".
7.     Claims 8 and 19 disclose, "the data added to the first storage object description indicates that the second storage object is a snapshot copy to the first storage object [**The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1**]".
8.     Claims 9 and 20 disclose, "the first storage object description is transmitted to the first computer system after the data is added to the first storage object description

[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]. The primary control always recognizes the secondary storage control as its copy to make the data updates possible (Figure 2). Therefore, the "data" is already present and constantly being updated before the transmission.

9. Claims 10 and 21 disclose, "data that relates the second storage object to second underlying storage objects [Mapping between virtual and physical volumes, Paragraph 34]."

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 2, 3, 11, 13, 14 and 22 are rejected under 35 USC 103 (a) as being obvious over Shackelford et al. (US 2005/0154845) in view of Berg (US 6,222,558).
2. As per claims 2, 3, 11, 13, 14 and 22, Shackelford et al. disclose, "transmitting the first storage object description after the data is added to the first storage object description to indicate that the first storage object is related to the second storage object [The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]. The primary control always recognizes the secondary storage

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control as its copy to make the data updates possible (Figure 2). Therefore, the "data" is already present and constantly being updated before the transmission.

Shackelford et al. do not disclose expressly, "transmitting the first storage object description to the second computer system; transmitting the second storage object to the first computer system".

**Berg discloses transmitting object description to other workstations in column 2, at lines 46-51.**

Shackelford et al. and Berg are analogous art because they are from the same field of endeavor of data transmission.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Shackelford et al. by transmitting object description to other workstations as taught by Berg in column 2, at lines 46-51.

The motivation for doing so would have been to provide a simplified set of commands that is concise for rapid transmission and reception as expressly taught by Berg in column 2, at lines 38-41.

Therefore, it would have been obvious to combine Berg with Shackelford et al. for the benefit of simultaneous data sharing to obtain the invention as specified in claims 2, 3, 11, 13, 14 and 22.

***Arguments Concerning Prior Art Rejections***

**1<sup>st</sup> Point of Argument**

Regarding independent claims 1, 6, 12 and 17, the applicant argues that Shackelford does not teach the new limitation, "snapshot".

The applicant states that "in general, a snapshot is a point-in-time copy of a data object", which is patentably different from mirroring. However, the claim does not reflect the applicant's point. At this point, the claim only recites the word, "snapshot" which is "copying data from one storage to another", and the "mirroring" from the cited reference does the same function.

Therefore, the examiner suggests that the claim should recite more than just "copying data from one storage to another" in order to be distinguished from the "mirroring" from the cited reference.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

A. Claims Rejected in the Application

Per the instant office action, claims 1-22 have received a second action on the merits and are subject of a second action final.

B. Direction of All Future Remarks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae Un Yu who is normally available from 9:00 A.M. to 5:30 P.M. Monday thru Friday and can be reached at the following telephone number: (571) 272-1133.

If attempts to reach the above noted examiner by telephone are unsuccessful, the Examiner's supervisor, Sanjiv Shah, can be reached at the following telephone number: (571) 272-4098.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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12/13/2006

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